

- Page 12 of the abstract as filed in the PCT international application
- 6 sheets of drawings as filed in the PCT international application

August 3, 2001

Date

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Richard J. Streit", written over a horizontal line.

Attorney for Applicant

Richard J. Streit Reg. 25765
c/o Ladas & Parry
224 South Michigan Avenue
Chicago, Illinois 60604
(312) 427-1300

09890698.090401
T04050" 86906860

- 10 -

We Claim:

1. A method of processing an optical device incorporating a waveguide, the method comprising the step of:

5 - utilizing a laser to heat and thereby ablate a surface of the device so as to induce a stress in said optical device and thereby alter an optical characteristic of the waveguide, wherein the power density of the laser is selected to effect surface ablation.

10 2. A method as claimed in claim 1 wherein the laser comprises a carbon dioxide laser source. *Claim 1*

3. A method as claimed in ~~any one of the preceding claims~~ wherein the method is utilized to alter the birefringent properties of the waveguide.

15 4. A method as claimed in claim 3 wherein the TM and TE birefringent modes are substantially aligned by the method.

5. A method as claimed in ~~any one of the preceding claims~~ further comprising the step of masking the surface with a thermally conductive material having an aperture defined to minimise exposure of the device to the laser. *Claim 1*

20 6. A method as claimed in ~~any one of the preceding claims~~ wherein the device comprises a sensor. *Claim 1*

7. A method as claimed in ~~any one of the preceding claims~~ further comprising the step of:

25 - depositing a material layer on the surface.

8. A method as claimed in claim 7, wherein the step of depositing the material layer comprises depositing the material layer on portions of the surface affected by the ablation.

9. A method as claimed in ~~any one of the preceding claims~~ further comprising the step of:

35 - mounting a further component in a groove formed in the surface as a result of the ablation.

10. A method as claimed in claim 7 ~~or 8~~, wherein the material layer is provided as an electrode for

- 11 -

electrically contacting the device.

11. A method as claimed in claim 9, wherein the further component comprises a modulator for modulating a characteristic of the device. *claim 11*

5 ~~claims~~ 12. A method as claimed in ~~any one of the preceding~~ wherein the step of utilising the laser to heat the surface is conducted at different locations of the device so as to form an optical structure.

10 13. A method as claimed in claim 12, wherein the optical structure comprises a grating structure.

14. A method as claimed in ~~claims 12 or 13~~, wherein the optical structure comprises a polarization filter. *claim 12*

15 ~~claims~~ 15. A method as claimed in ~~any one of the preceding~~ wherein the method is used to diminish UV induced changes present in the waveguide. *claim 11*

16. A method as claimed in ~~any one of the preceding~~ wherein the device comprises an optical fibre. *claim 11*

20 ~~claims~~ 17. A method as claimed in ~~any one of the preceding~~ wherein the method is utilized to mark the device by way of the ablation. *claim 11*

25 ~~claims~~ 18. A method as claimed in ~~any one of the preceding~~ wherein the laser comprises a semiconductor laser operating at a wavelength of more than about 1.8 micro metre.

19. A method as claimed in claim 18, wherein the surface of the device comprises SiO₂. *claim 11*

30 ~~claims~~ 20. A method as claimed in ~~any one of the preceding~~ wherein the method further comprises the step of providing an absorber material to facilitate the heating of the surface of the device.

35 21. A device incorporating a waveguide, wherein the waveguide has been processed utilising a laser to heat and thereby ablate a surface of the device so as to induce a stress in said device and thereby alter an optical characteristic of the waveguide, wherein the power density of the laser is selected to effect ablation.